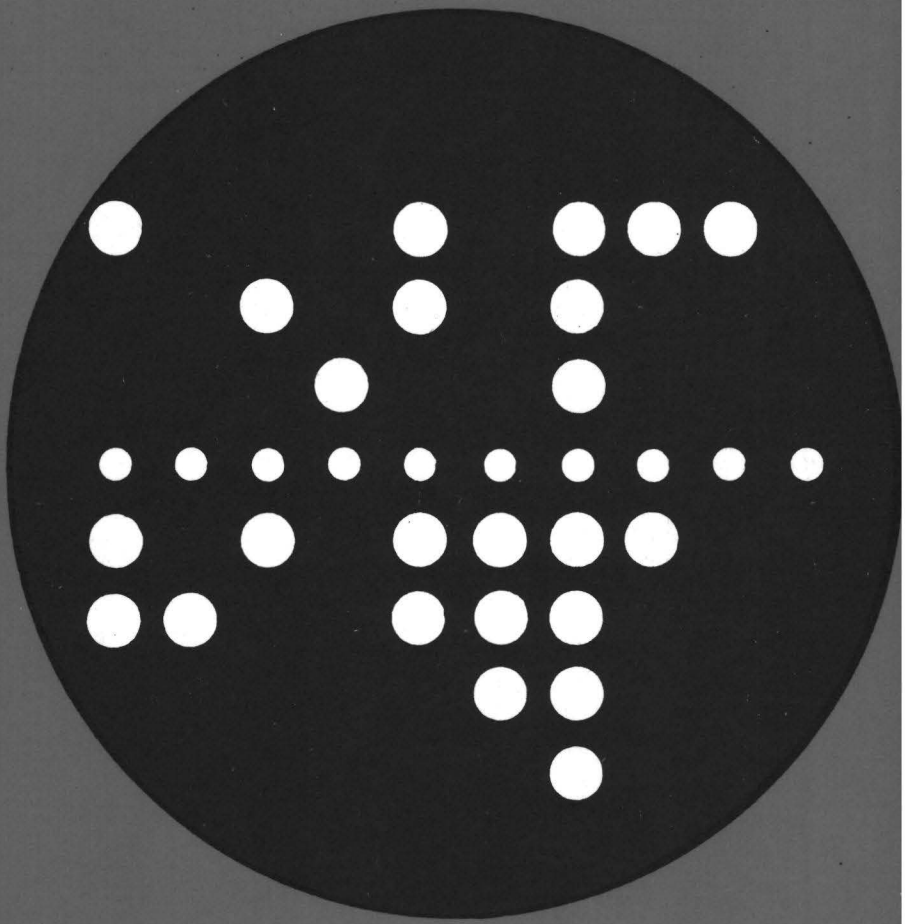
COMPUTING CENTRE NEWSLETTER

March 1979 - N° 29

LIBRARY



Commission of the European Communities
JOINT RESEARCH CENTRE
Ispra Establishment

CONTENTS

EDITORIAL NOTE.

The Computing Centre Newsletter is published monthly except for August and December.

It describes developments, modifications and specific topics in relation to the use of the computing installations of the Joint Research Centre, Ispra Establishment.

The aim of the Newsletter is to provide information of importance to the users of the computing installations, in a form which is both interesting and readable.

The Newsletter also includes articles which are of intellectual and educational value in order to keep the users informed of new advances in computer science topics.

The Editorial Board is composed as follows:

J. Pire.	Responsible Editor.
M. Dowell.	Technical Editor.
C. Pigni.	Editors.
H. de Wolde.	

Administration and contact address:

Ms. A. Cambon (tel. 730)
Support to Computing
Building 36
J.R.C. Ispra Establishment
21020-ISPRA (Varese)

LEGAL NOTICE:

Neither the Commission of the European Communities nor any person acting on behalf of the Commission is responsible for the use which might be made of the information in this Newsletter.

Graphics: On-line Scanning of the Intermediate File.
P. Nichele

The use of the present graphic devices has been characterized by a rather long turn-around time.
Until about one year ago, when only the Calcomp plotter was available, it took at least a half day to obtain the graphic results. In the case of hardware breakdown the delay time was much longer.
The installation of additional plotters, Gould 5200 and Benson 1102, together with the GRAPHIT system, reduced the turn-around time considerably. However, the manpower situation in the Computer Room is such that the mounting of the tapes is delayed frequently by lack of personnel.

To improve the situation, the GRAPHIT system has been extended (under TSO) with the link to the Tektronix 4014/4015 displays. This allows for an additional graphic output device without the burden of tape mounting.

The present version is still a rather rudimentary tool, but it has been decided to offer the users access to these new GRAPHIT facilities at the present time because of the significant savings in time in the production of graphic output.
A more sophisticated version including an interrupt system and screen partitioning, will be developed in the near future.

The prerequisites for the use of the new option are:

- the Intermediate File must be created according to the procedure as described in the Green Book; "GRAPHIT", page 10.

- the Intermediate File has to reside on an on-line volume, the necessary space having been reserved previously. The DD statement for the file is:

```
//GO.FT16F001  DD  DSN=name,VOL=SER=volname,UNIT=DISK,
//               DISP=(OLD,KEEP)
```

- the access to a Tektronix 4014 or 4015 terminal connected to TSO.
  For the time being, the Tektronix display in the terminal room of the Informatics Support Sector (Building 36) may be used, but only for scanning the I.F.; other use of this terminal is reserved for the personnel of the sector.

After the online scanning of the Intermediate File one may still produce a plot on one of the off-line devices by a job of the type:

```
//          EXEC GOULD,TAPE='EUxxxx'
//GO.FT15F001  DD  DSN=name,VOL=SER=volname,UNIT=DISK,
//             DISP=(OLD,KEEP)
//GLD.SYSIN    DD *
     input data for GOULD, see Green Book "GRAPHIT"
/*
```

Some TSO command procedure have been written to facilitate the use of the new program.

The command "GRAPHIT" causes the execution of preliminary tasks, allocation of files and the opening of the GRAPHIT session.

After this command the following special commands may be used:

- GHELP invokes the GRAPHIT HELP processor
- INTERFUX creates and reserves an intermediate file on a USEROX volume. This is a special version of the CREARES command (see GHELP for further information).
- PLOT, to scan an intermediate file.

The Syntax of the PLOT command is as follows:

PLOT filename volname

in which filename is the name of the I.F
volname is the name of the volume where the I.F resides.

The present version of the program is written in the interrogative mode, including error returns and repeating action.
On entering the program, the user may specify a window with units in centimetres, meaning a part of the drawing as is represented numerical in the I.F. The second option is to choose a picture number, which is related to the use of the PICTNO subroutine in the users' program. All plot actions between two consecutive calls to subroutine PICTNO(K) are considered part of one picture which is identified by the number K.
Subsequently the program asks for a multiplication factor for magnification or reduction of the image. However, specification of a larger than screen size window implies an automatic deformation/reduction of the image. A warning towards the magnitude of deformation/reduction in respectively the x- and y-direction is given.

After the display of the first image, the user may specify a new window on the screen with the help of the "crosshair" cursor. Answering "YES" to the relevant question, will cause the crosshair cursor to be displayed twice, first to allow the user to move the crosshair cursor to indicate the left under point of the desired window, and then, after hitting the C character + Return Key, another time for the definition of the upper-right point (followed by D character + Return Key). The specified coordinates are stored and may be used as references for a fresh display on returning to the beginning of the process.

In general the use of the program is self-explanatory. However, in case of particular problems, the user may contact the Advisory Service for more information. Please contact the consultants only during the defined time of the Advisory Service

Examples

The following gives examples of a few simple applications of the facility.

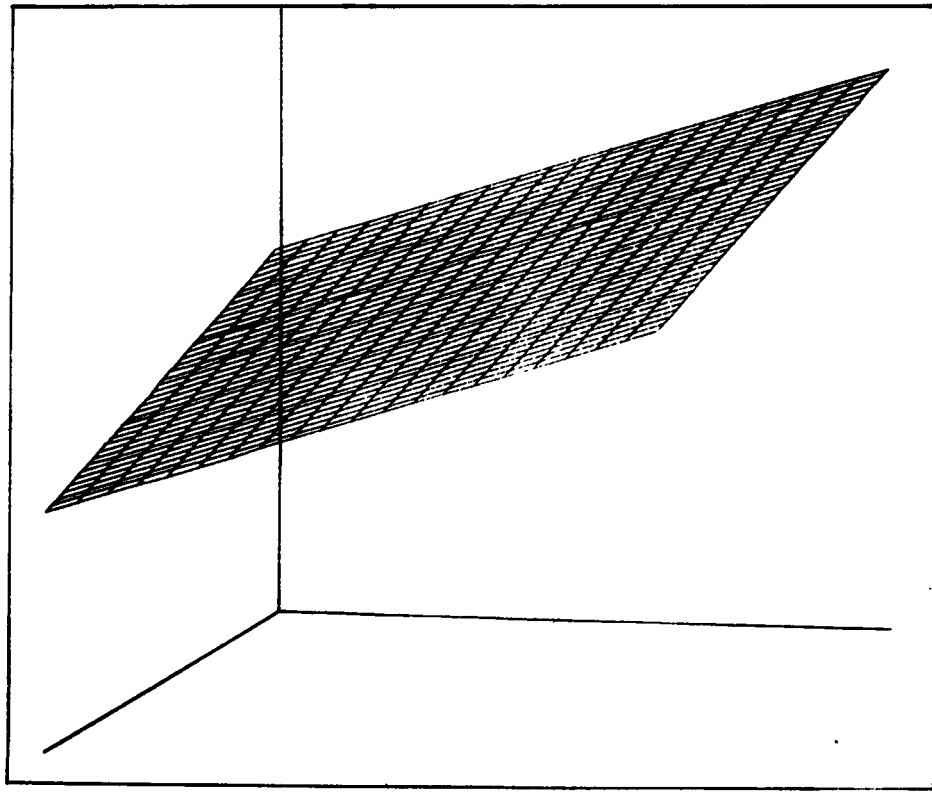
A/ An Example of the initiation of the Tektronix GRAPHIT system

```
logon [userid] [password] proc(fq1log)
IKJ56455I [userid] LOGON IN PROGRESS AT 15:08:10 ON MAY 23, 1979
IKJ56951I NO BROADCAST MESSAGES
IKJ566501 CPU - 00:00:01 EXECUTION - 00:00:13 SESSION - 00:00:33
READY
graphit
READY
plot ela.interf user0c
```

B/ An Example of the interaction between user and system to define the window

```
GRAPHIT TEKTRONIX - VERSION MAY 1979
YOU MAY SPECIFY A WINDOW, ENTER 1,
OR A PICTURE NUMBER, ENTER 2
1
PLEASE SPECIFY THE DESIRED WINDOW
XMIN IN CM =
5.0
XRANGE IN CM =
15.0
YMIN IN CM =
5.0
YRANGE IN CM =
15.0
PLEASE SPECIFY A MULTIPLICATION FACTOR, REAL NUMBER
1.5
DO YOU WANT TO DEFINE ANOTHER WINDOW?  ANSWER YES OR NO
no
DO YOU WANT TO DEFINE ANOTHER FACTOR?  ANSWER YES OR NO
no
TO CONTINUE NOW AND AFTER THE DISPLAY PRESS RETURN KEY
```

C/ An Example of the "hard-copy" output

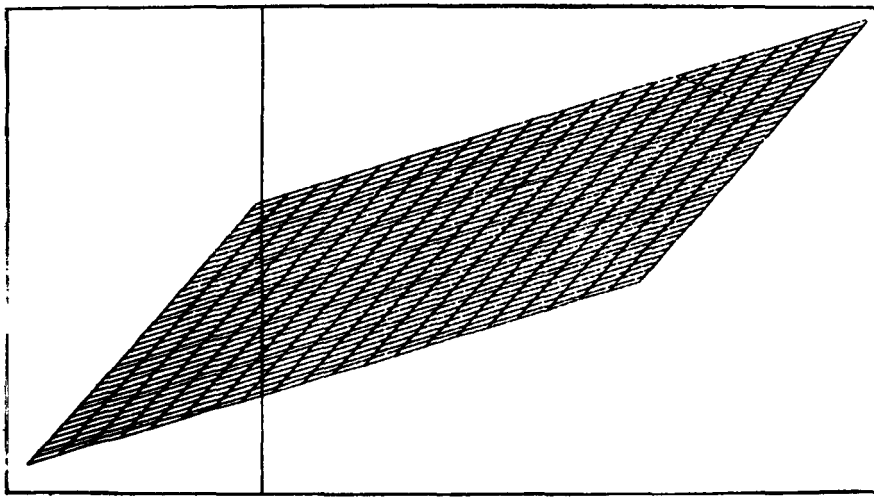


D/ An Example of the dialogue for setting up a "crosshair cursor" defined window

```
DO YOU WANT A CURSOR DEFINED WINDOW?
ANSWER YES OR NO
yes
PUT CROSS TO LEFT UNDER CORNER OF DESIRED WINDOW
AND PRESS C-KEY AND RETURN KEY
PUT THEN CROSS TO RIGHT UPPER CORNER
AND PRESS D-KEY AND RETURN KEY
```

E/ Dialogue for a further factor specification using the window defined in D.

```
    SPECIFICATION
DIMENSIONS XMIN,XRANGE.YMIN,YRANGE,FACTOR
     6.4525      12.0670       7.5494       9.9820      1.000
GRAPHIT - TEKTRONIX - VERSION MAY 1979
YOU MAY SPECIFY A WINDOW, ENTER 1,
OR A PICTURE NUMBER, ENTER 2
OR MAINTAIN THE STORED WINDOW, ENTER 3
3
PLEASE SPECIFY A MULTIPLICATION FACTOR, REAL NUMBER
2.
DO YOU WANT TO DEFINE ANOTHER WINDOW?  ANSWER YES OR NO
no
DO YOU WANT TO DEFINE ANOTHER FACTOR?  ANSWER YES OR NO
no
TO CONTINUE NOW AND AFTER THE DISPLAY PRESS RETURN KEY
```



Some notes on the Tektronix 4014/4015.

The only difference between the Tektronix 4014 and the 4015 terminal is that the latter one also has an APL character set. However, for the time being this option is not used.
Check that the ASCII/APL switch is in the ASCII position. The symbols in front of the keys are the ASCII ones. If there is only one symbol, you have to press the key together with SHIFT.
The MARGIN switch must be always in the central position.

The terminal has 4 different character sizes which may be chosen by the following keys:

Keys	char./line	lines	
ESC 8	74	35	(Default)
ESC 9	81	38	
ESC :	121	58	
ESC ;	132	64	

At the start of the GRAPHIT program, the smallest character size is defined, however one may manually reset another size afterwards. The character size setting does not influence the graphic output. The BREAK key interrupts the program and returns control to T.S.O. (i.e. BREAK is used for attention interruption).

There are no line-deletion and character-deletion facilities available by default for the Tektronix terminal. The user should use the PROFILE command to set up these characters. It is suggested that these backspace character(BS) is used for character deletion and either the BREAK key or CTRL-X is used for line deletion. Therefore the user should type (after LOGON and only once to set up the profile)

```
PROFILE CHAR(BS) LINE(ATTN)

or

PROFILE CHAR(BS) LINE(CTLX)
```

NOTE People are advised not to use other character-deletion or line-deletion character as these may interfere with character used for graphic output.

No "simulated" attention interruptions are predefined for Tektronix terminals. The user may use the TERMINAL command for each session to set up such facilities if he wishes.
A more detailled article on this type of terminal will be published later.

Charge de l'ordinateur principal.
J. Pire

Les relevés de comptabilisation et même les statistiques d'utilisation de l'ordinateur IBM 370/165 sont basés sur les mesures effectuées par S.M.F. (System Measurement Facility). S.M.F. ne mesure malheureusement que l'utilisation des ressources en mode probleme, c'est-à-dire l'usage qu'en font les utilisateurs et non celui qu'en fait le système de gestion (Operating System).
L'utilisation d'autres moyens de mesure permet au contraire de mesurer globalement l'emploi des ressources sans distinction de qui les utilise.
A diverses reprises l'utilisation de ces derniers moyens nous a permi de trouver des points d'engorgement de l'installation et de vérifier le résultat des modifications apportées.
Aux cours des journées des 2 - 3 - 4 mai l'instrument de mesure globale a été installe chaque jour pour 3 périodes de 4 heures. (9.00-12.00; 14.00-17.00; 19.00-22.00).
Les relevés avaient pour but de vérifier un dernier réajustement de la distribution des fichiers utilisés par T.S.O. de facon a éliminer un dernier point d'engorgement constaté au cours d'un enregistrement précédent.
Apres avoir constaté que tout engorgement sur les unités à disque avait été éliminé et que par conséquent la limitation à l'utilisation de l'unité centrale ne dépendant plus des unités périphériques, nous avons utilisé les mêmes relevés pour d'une part obtenir la distribution de l'utilisation globale de l'unité centrale et d'autre part vérifier quel était encore la disponibilité de cette ressource.
Pour les heures intermédiaires (13.00 et 18.00) pour lesquelles nous ne possédons pas de mesures directes nous nous sommes permis d'interpoller linéairement entre les heures voisines. La table I fournit pour chaque heure la moyenne des relevés journaliers. Nous trouvons que pour ces trois jours l'utilisation moyenne journaliere a été de 9,5h soit au total 28.53 heures.
Le relevé selon S.M.F. a été de 22.55 heures pendant la même période.
L'utilisation du C.P.U. par l'O.S. peut donc être estimé à 6.0 heures soit un 'over head' global de 21%.
L'utilisation en mode probleme se répartissait comme suit:

T.S.O. : 2.75 heures
Batch : 19.80 heures

Nous avons profité de cette occasion pour vérifier la règle simple que nous appliquons généralement pour estimer la charge globale du C.P.U. à partir des informations de S.M.F., à savoir

1.15 Batch et 2.0 T.S.O.

Dans le cas présent l'estimation aurait été de 28.3 heures qui compare aux 28.5 heures estimees par l'autre méthode donne un résultat d'une précision absolument inespérée.
Nous pouvons en outre constater que 2 heures de C.P.U. restent disponibles le soir pour l'exploitation de très gros programmes et que 2 heures environ sont disponibles entre 10.00 et 16.00.
Nous omettons volontairement le temps disponible avant 10 heures car nous savons qu'il est difficile pour les utilisateurs ayant pris connaissance vers 8h30 des résultats de la veille de nous proposer d'autres problèmes avant 10 heures.
Les 2 heures de C.P.U. disponibles pendant les heures normales de bureau ne peuvent être exploitées pour la mise au point des très gros programmes (500 K et plus) car la mémoire nécessaire est pendant la majeure partie de cette période occupée par les systèmes conversationnels (I.M.S, T.S.O. et ADABAS).
L'adjonction d'un quatrième mégabyte de mémoire centrale que nous projettons pour le second semestre 1979, permettera de lever cette restriction et d'uniformiser la règle de priorité à l'ordinateur pour tous les programmes (dans les limites 100 à 1000 kilobytes).
Nous espérons que ces quelques informations auront pu intéresser nos utilisateurs et que la dernière annonce satisfaira ceux d'entre eux qui par suite de la nature de leurs problèmes sont actuellement limités à un seul passage journalier.

Table I

Heures	Utilisation C.P.U. en %	Disponible en %
8		50
9	50	50
10	73	27
11	73	27
12	78	22
13	67	33
14	58	42
15	75	25
16	80	20
17	93	7
18	98	2
19	89	11
20	67	33
21	50	50
22		100
23		100

Statistics of computing installation utilization.
Report of computing installation exploitation
for the month of March 1979.

	YEAR 1978	YEAR 1979
General		
Number of working days	21 d	22 d
Work hours from 8.00 to 24.00 for	16.00h	16.00h
Duration of scheduled maintenance	26.83h	20.17h
Duration of unexpected maintenance	31.47h	19.83h
Total maintenance time	58.30h	40.00h
Total exploitation time	281.20h	312.00h
CPU time in problem mode	153.02h	179.72h
Batch Processing		
Number of jobs	9303	8976
Number of cards input	2121000	1818000
Number of lines printed	27908000	30359000
Number of cards punched	156000	136000
CPU time	150.47h	161.27h
Number of I/O (Disk)	22754000	23633000
Number of I/O (Magnetic tape)	4937000	4325000
T.S.O		
Number of LOGON's	730	3114
Number of messages sent by terminals	36215	179000
Number of messages received by terminals	154629	848000
CPU time	2.55h	17.58h
Number of I/O (Disk)	591000	2821000
Connect time	311.94h	1758.70h
IMS		
Total time service is available	-	289.37h
CPU time	-	1.35h
Number of I/O (Disk)	-	382000

Utilisation of computer centre by objectives and appropriation accounts for the month of March 1979.

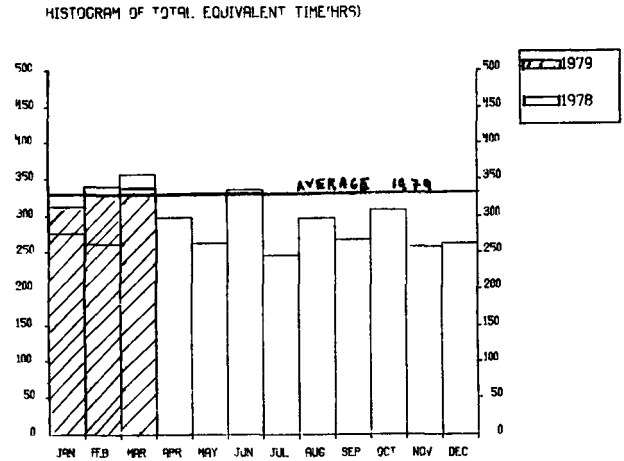
		IBM 370/165 equivalent time in hours
1.20.2	General Services - Administration - Ispra	50.96
1.20.3	General Services - Technical - Ispra	0.95
1.30.3	Central Workshop	5.26
1.30.4	L.M.A.	-
1.90.0	ESSOR	17.83
1.92.0	Support to the Commission	9.73
2.10.1	Reactor Safety	189.76
2.10.2	Plutonium Fuel and Actinide Research	12.09
2.10.3	Nuclear Materials	9.06
2.20.1	Solar Energy	0.17
2.20.2	Hydrogen	1.31
2.20.4	Design Studies on Thermonuclear Fusion	7.07
2.30.0	Environment and Resources	23.50
2.40.0	METRE	8.33
2.50.1	Informatics	24.93
2.50.2	Training	-
2.50.3	Safeguards	8.56
	TOTAL	369.51
1.94.0	Services to External Users	20.40
	TOTAL	389.91

BATCH PROCESSING DISTRIBUTED BY REQUESTED CORE MEMORY SIZE

	100	200	300	400	600	800	1000	1200	1400	>1400
No. of jobs	2331	2557	1812	1323	324	81	19	106	9	-
Elapsed time	66	203	213	258	70	36	6	42	2	-
CPU time	2.8	29.1	38.6	49.0	17.0	11.0	1.2	11.7	0.7	-
"Equiv" time	23	65	79	98	28	18	3	21	2	-
"Turn" time	0.7	2.5	3.5	3.5	6.0	6.2	5.7	5.5	6.0	-
I/O (disk)	2166	4789	5691	6502	1543	928	187	1354	141	-
I/O (tape)	1740	931	291	1190	123	8	1	14	-	-

NOTE.
All times are in hours.
"Equiv" means equivalent.
"Turn" means turn around.
All I/O transfers are measured in 1000's.

PERCENTAGE OF JOBS FINISHED IN LESS THAN										
TIME	15mn	30mn	1hr	2hrs	4hrs	8hrs	1day	2day	3day	6day
%year 1978	31	46	62	76	89	98	99	99	100	100
%year 1979	23	36	49	64	80	94	99.8	100	100	100



Projected total for 1979 = 3954 hours(using average).
Total for 1978 was = 3424 hours.

REFERENCES TO THE PERSONNEL/FUNCTIONS OF THE COMPUTING CENTRE.

Manager of The Computing Centre		J.Pire		
Responsible for User Registration	Ms.	G.Rambs		
Operations Sector				
Responsible for the Computer Room		P.Tomba		
Substituted in case of abscence by:		A.Binda		
Responsible for Peripherals		G.Nocera		
Systems Group				
Responsible for the group		D.Koenig		
Substituted in case of abscence by:		P.A.Moinil		
Responsible for TSO Registration		C.Daolio		
			Room	Tele.
Informatics Support Sector				
Responsible for the Sector		G.Gaggero	1874	787
Secretary	Mrs.	G.Hudry	1873	787
Responsible for User Support		H.de Wolde	1883	1259
General Inf./Support Library	Mrs.	A.Cambon (See Note 2)	1871	730
Advisory Service/List of Consultants (See Note 1)			1870	730

A.Inzaghi A.A.Pollicini
H.I. de Wolde
R.Meelhuysen M.Dowell

NOTE 1. The advisory service is available in the same room as the Computing Support Library (room 1870). Exact details of the advisory service times for a specific week can be found at the head of any output listing (for that week).
Any informatics problem may be raised. However, the service is not designed to help users with problems which are their sole responsibility. For example, debugging of the logic of programs and requests for information which can easily be retrieved from available documentation.
If necessary, other competent personnel from the informatics division may be contacted by the consultant but not directly by the users.
The users should only contact the person who is the consultant for that specific day and only during the specified hours.
Outside the specified hours general information may be requested from Mrs. A. Cambon (see note 2) in the Computing Support Library.

NOTE 2. Mrs. Cambon is at present replaced by Mrs. C La Cognata.

HOW TO BECOME A REGULAR READER OF THE NEWSLETTER.

Persons interested in receiving regularly the "Computing Centre Newsletter" are requested to fill in the following form and send it to :-

Ms. A. Cambon
Support To Computing
Building 36
Tel. 730.

NAME .....

ADDRESS .....

.....

.....

TELEPHONE .....